

58049-00035.ST25.Substitute (3-19-07)

SEQUENCE LISTING

<110> Korea Research Institute of Bioscience and Biotechnology
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KWON, Suk-Yoon
LEE, Haeng-Soon
RYU, Sun-Hwa

<120> Multiple stress-inducible peroxidase promoter derived from
Ipomoea batatas

<130> 58049-00035

<140> US 10/597,945

<141> 2006-08-11

<150> PCT/KR2004/000381

<151> 2004-02-24

<160> 30

<170> KopatentIn 1.71

<210> 1

<211> 1512

<212> DNA

<213> Ipomoea batatas

<400> 1

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ggcttctcca ttaccagaa taccataca gccatgaaa ggcagcttaa gtcacccca 120

aagtggctgc tagacaacac tctagagtcg tcagtggccg acgtgctctc actacgccta 180

ggcatctcct ccggcaagct ttccgacgaa gactgcatat tctccgccgt taagggaagt 240

gtggacgccg ccattgatgc agaaacccgc atgggtgctt ccctcattcg cctcttcttc 300

catgactgct ttgttgatgt acgtacgcta atttgttagc atgatgtttt tttttttttt 360

tttttttttc ccactgcatt atattaggaa attaaacaga ttgaaatgtg tgttattaat 420

gtattatctg cagggtttgt acgcagggtct tctactaac gatacaccta ctttcaccgg 480

agaacagacc gccggcggca ataataactc agtcagaggt tttgaggtga tacaacaagc 540

taaagagaat gtgataacca aatgtcccta catacaagta tcttgtgccg acatcttatc 600

cattgtctgc cgtgattctt tccagagagt aagtccattt atttctaag gttgaaatta 660

ataagaacaa gaatccaac aaataacaga cagtaaaaaa aaaagattta tgtggtttga 720

caatagtgtg aaattgtttt tatatttaat gactagtatt tatgcattat atttatatgc 780

aactctaaac atgcagttta ctggagaaac gtacaccgtg actctgggaa gactcgatgc 840

aagaacggcg aaccttaccg gagtaaacac ccaactcgtc ggaccaaagc aggaattggc 900

atcgcaagtc gagaaatttg cggcgaaagg gttctccgaa acggagctag tcgccttggt 960

aggtgttcac acggttgggt ttctgagatg tccgctttta tgcgttccca ttttcatcaa 1020

tcccgcccg gctccacgc tgcaatgcaa ctgtccggtg agtcccgcac acaccgggct 1080

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ggtagggcctg gacccactc cgttgacgtg ggaccaaagt ttttactcgc acgtgggctaa 1140
cggacaaggg cttctgttct ccgacaacga gctgatgaat agcaacacca ccagcgccgc 1200
cgtaggaggg tacagggacg agatggacgc ttttctcgcc gatttcgcgc ccgccatggt 1260
gaagatgagc ctctgtccgc cgtcccccgc agtggagctc gaaatccgag aggttttgag 1320
cgaggtgaat gccaacacag ttgcatccat gtgaagtctg ttcccatcga catcaataac 1380
gtctgtgatt ctgtgaaagt tttactcgga ctgtgaagaa ttttcacttt ctgtgtgttc 1440
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ataaatttgt ta 1512

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<210> 2
<211> 110
<212> DNA
<213> Ipomoea batatas

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<220>
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<222> (1)..(110)
<223> -110 deletion promoter

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<400> 2
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tcgaccactc atttcttctt catacttcct ttgctgtgat aatcatcac 110

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<212> DNA
<213> Ipomoea batatas

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<220>
<221> promoter
<222> (1)..(177)
<223> -177 deletion promoter

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<400> 3
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catcagctcg accactcatt tcttcttcat acttcctttg ctgtgataat catcatc 177

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<210> 4
<211> 306
<212> DNA
<213> Ipomoea batatas

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<220>
<221> promoter
<222> (1)..(306)
<223> -306 deletion promoter

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<400>      4
taaggtgttt tatcgtggca gcatgagtgc atgacaaacg catatattat tattaataca 60
aaatagtact ccaatcataa taaattatct tatattatat tgccaacaat taaaaattca 120
aattagaaca aattaaatct cagtttgctt tattatatta ttatcaacaa taataattta 180
atactgatcg aagaactttc ctttcaagt tctctattta aggaagcctg agaagccatt 240
aatcctcatc atcagctcga cactcattt cttcttcata cttcctttgc tgtgataatc 300
atcatc                                           306
```

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<210>      5
<211>      366
<212>      DNA
<213>      Ipomoea batatas

<220>
<221>      promoter
<222>      (1)..(366)
<223>      -366 deletion promoter
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<400>      5
tagtataatg aaataaagtt aatcattctc tatatttgat gatgtaatt agtatcatgg 60
taaggtgttt tatcgtggca gcatgagtgc atgacaaacg catatattat tattaataca 120
aaatagtact ccaatcataa taaattatct tatattatat tgccaacaat taaaaattca 180
aattagaaca aattaaatct cagtttgctt tattatatta ttatcaacaa taataattta 240
atactgatcg aagaactttc ctttcaagt tctctattta aggaagcctg agaagccatt 300
aatcctcatc atcagctcga cactcattt cttcttcata cttcctttgc tgtgataatc 360
atcatc                                           366
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<210>      6
<211>      433
<212>      DNA
<213>      Ipomoea batatas

<220>
<221>      promoter
<222>      (1)..(433)
<223>      -433 deletion promoter
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<400>      6
atggtgactt aaagggtcga atccaacata tattctgaca tttaaaaatg ctaacgtacg 60
gttagattag tataatgaaa taaagttaat cattctctat atttgatgat ggtgaattag 120
atcatggtaa ggtgttttat cgtggcagca tgagtgcacg acaaacgcac atattattat 180
taaaacaaaa tagtactcca atcataataa attatcttat attatattgc caacaattaa 240
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aaattcaaat tagaacaat taaatctcag ttgctttat tatattatta tcaacaataa 300
 taatttaata ctgatcgaag aactttccct ttcaagttct ctatttaagg aagcctgaga 360
 agccattaat cctcatcatc agctcgacca ctcatttctt cttcatactt cctttgctgt 420
 gataatcatc atc 433

<210> 7
 <211> 818
 <212> DNA
 <213> Ipomoea batatas

<220>
 <221> promoter
 <222> (1)..(818)
 <223> -818 deletion promoter

<400> 7
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 gaagttccat ctatggaaat aacggattat ttatctaatt ttcaaatctt atatatatag 120
 tctcgagtgg aacaaaaata gaactaattt gaacaaatca aagtctaaga aaataatata 180
 tgctttagca gcaaaaataa gaatggtact atacttaatc ctcatcatag tcttcaaccc 240
 tgcatatagc acacttaaca ttttatattc aaatatactt taatttagtc atgataatac 300
 aactcaccta ctccattata gccgataata caactcacct agctactcca ttatagtcca 360
 acaatatcaa atgaataaaa tagtaatggt gacttaaagg gctgaatcca acatatattc 420
 tgacatttaa aaatgctaac gtacgggttag attagtataa tgaaataaag ttaatcattc 480
 tctatatttg atgatggtaa ttagtatcat ggtaagggtg tttatcgtgg cagcatgagt 540
 gcatgacaaa cgcatatatt attattaaaa caaaatagta ctccaatcat aataaattat 600
 cttatattat attgccaaca attaaaaatt caaattagaa caaattaaat ctcagtttgc 660
 tttattatat tattatcaac aataataatt taatactgat cgaagaactt tccctttcaa 720
 gttctctatt taaggaagcc tgagaagcca ttaatcctca tcatcagctc gaccactcat 780
 ttcttcttca tacttccttt gctgtgataa tcatcatc 818

<210> 8
 <211> 1199
 <212> DNA
 <213> Ipomoea batatas

<220>
 <221> promoter
 <222> (1)..(1199)
 <223> -1199 deletion promoter

<400> 8
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acttttgtaa aaaatttgat ttttttttt gatgaattca tatactccaa agattttcct 120
 catttaatta aatttctatc ctcatgttga acccattaat cgaataattg acataattaga 180
 taaacttagc catcatatga catttgatca tgattgatga tttttaaaa ataaaaacaa 240
 aattatgaaa gggtaatgaa atattttaaa aaaattatgt aaacctgtga atctagtaat 300
 ctgtacaata ataattttgt ttcaactaag aggatgttgg caaaagtata attaaacttg 360
 tgatcttcgt acaataatta tgcttcacgc actcaactag tcacatcttt ccaggcaaaa 420
 tttacttttc tatgaatatg agaagttcca tctatggaaa taacgggatta tttatctaat 480
 tttcaaatc tatatatata gtctcgagtg gaacaaaaat agaactaatt tgaacaaatc 540
 aaagtctaag aaaataatc atgcttttagc agcaaaaaata agaatggtac tatacttaat 600
 cctcatcata gtcttcaacc ctgcataatg cacacttaac attttatatt caaatatact 660
 ttaatttagt catgataata caactcacct actccattat agccgataat acaactcacc 720
 tagctactcc attatagtc aacaatatca aatgaataaa atagtaattg tgacttaaa 780
 ggctgaatcc aacatatatt ctgacattta aaaatgctaa cgtacggta gattagtata 840
 atgaaataaa gttaatcatt ctctatatt gatgatgga attagtatca tggtaagggtg 900
 ttttatcgtg gcagcatgag tgcagtacaa acgcatatat tattattaaa acaaaatagt 960
 actccaatca taataaatta tcttatatta tattgccaac aattaaaaat tcaaataga 1020
 acaaatataa tctcagtttg ctttattata ttattatcaa caataataat ttaatactga 1080
 tcgaagaact ttccctttca agttctctat ttaagggaagc ctgagaagcc attaatctc 1140
 atcatcagct cgaccactca tttcttcttc atacttctct tgctgtgata atcatcatc 1199

<210> 9
 <211> 1467
 <212> DNA
 <213> Ipomoea batatas

<220>
 <221> promoter
 <222> (1)..(1467)
 <223> -1467 deletion promoter

<400> 9
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 atactactcc aaaaattatg aaatttttat ggtagcttct acacttatag aactacatgt 120
 ataaaaata ttgggtcaaa atacccttacc gatttttccc aaatattcac ggaacttact 180
 gccagaatct accctgcttt ttcccttcac tattttcaca actataagca tatatgggca 240
 taaatatgac atgaacatgc atgaaccaat gcagggtgaa agtaagattg aatatactga 300
 tactacaatt aactaatgat aaagtataac ttttgtaaaa aatttgattt tttttttga 360

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tgaattcata tactccaaag attttcctca ttttaattaaa ttctatcct catgttgaa 420
ccattaatcg aataattgac atattagata aacttagcca tcatatgaca ttgatcatg 480
attgatgatt tttaaaaaat aaaaacaaaa ttatgaaagg gtaatgaaat attttaaaaa 540
aattatgtaa accctgtaat ctagttaatt gtacaataat aattttgttt caactaagag 600
gatgttgga caaagtataat taaacttggt atcttcgtac aataattatg cttcacgcac 660
tcaactagtc acatcttttc aggcataaatt tacttttcta tgaatatgag aagtcccatc 720
tatggaaata acggattatt tatctaattt tcaaattcta tatatatagt ctcgagtggg 780
acaaaaatag aactaatttg aacaaatcaa agtctaagaa aataatacat gcttttagcag 840
caaaaataag aatgggtacta tacttaatcc tcactatagt cttcaaccc tgcataatgca 900
cacttaacat tttataattc aatatacttt aatttagtca tgataataca actcacctac 960
tccattatag ccgataatc aactcaccta gctactccat tatagtccaa caatatcaaa 1020
tgaataaaat agtaatggtg acttaaaagg ctgaatccaa catatatctt gacattttaa 1080
aatgctaacg tacggttaga ttagtataat gaaataaagt taatcattct ctatatttga 1140
tgatggaat tagtatcatg gtaagggtgt ttatcgtggc agcatgagtg catgacaac 1200
gcatatatta ttattaaaac aaaatagtag tccaatcata ataaattatc ttattatata 1260
ttgccaacaa ttaaaaattc aaattagaac aaattaaatc tcagtttgct ttattatatt 1320
attatcaaca ataataattt aatactgac gaagaacttt ccttttcaag ttctctattt 1380
aaggaagcct gagaagccat taatcctcat catcagctcg accactcatt tcttcttcac 1440
acttcttttg ctgtgataat catcatc 1467

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<210> 10
<211> 1934
<212> DNA
<213> Ipomoea batatas

<220>
<221> promoter
<222> (1)..(1934)
<223> -1934 deletion promoter

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<400> 10
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aatatcatct ctacttaaac tagagagatt tccaactctc aattaatcac caaaggtaac 180
ttcceaata tccaaatgga aggtttcaac ttccaaacta ataccaaacc aaccggacta 240
atcataatca tattcataat cataaattgt ttctaactgc ccctgtccag aaattacagt 300
tttgcgcagt ccgaaagatt gagccggtaa caatagtctc cgaactcttt ttcacttgaa 360

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atttttatg tagaaccta acttatagta cttgatatcc ataaaaagt ttggtcacct 420
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tctgtctctc tggaccagtt ttggcaaaca attttgaac cacacttata ctactccaaa 540
aattatgaaa tttttatggt agcttctaca cttatagaac tacatgtata aaaaatattg 600
ggtcaaaata ctttaccgat ttttcccaa tattcacgga acttactgcc agaattctacc 660
ctgctttttc ctttactat tttcacaaact ataagcatat atgggcataa atatgacatg 720
aacatgcatg aaccaatgca gggtgaaaagt aagattgaat atactgatac tacaattaac 780
taatgataaa gtataacttt tgtaaaaaat ttgatttttt tttttgatga attcatatac 840
tccaaagatt ttctctcatt aattaaaatt ctatcctcat gttgaacca ttaatcgaat 900
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ttaaacaata atagtactcc aatcataata aattatctta tattattatt ccaacaatta 1740
aaaattcaaa ttagaacaaa ttaaatctca gtttgcttta ttatattatt atcaacaata 1800
ataatttaat actgatcgaa gaactttccc ttcaagttc tctatttaag gaagcctgag 1860
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tgataatcat catc 1934

```

<210> 11
 <211> 2433
 <212> DNA
 <213> Ipomoea batatas

<220>
 <221> promoter

<222> (1)..(2433)
 <223> -2433 promoter

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acttcaagct ctttatcccg taggctgcaa caacataacg acataacgac cactgggcaa 180
gggcatttac agccaccctg gggccaatca aggtcctcct cactcacttt agaaactaag 240
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atttcacaat tgagtccaat acttaaacg gctactttcat tagcccttga aggattttta 360
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ttttctctca aagtaagggt ttgacaacct ttatatcaa atagcatacg tttttcaacg 480
taagtttcat aacatttact tgccatctca ccacttcgtc ttaacaacat taggatattc 540
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taccaaacca accggactaa tcataatcat attcataatc ataaattggt tctaactgcc 780
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ttttgatgaa ttcataatac ccaaagattt tcctcattta attaaatttc tatcctcatg 1380
ttgaacccat taatcgaata attgacatat tagataaact tagccatcat atgacatttg 1440
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taaaaaaatt atgtaaaccc tgtaatctag taatctgtac aataataatt ttgtttcaac 1560
taagaggatg ttggcaaaag tataattaaa cttgtgatct tcgtacaata attatgcttc 1620
acgcactcaa ctagtacat cttccaggc aaaatttact tttctatgaa tatgagaagt 1680
tccatctatg gaaataacgg attatttatc taattttcaa attctatata tatagtctcg 1740

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agtggaacaa aaatagaact aatttgaaca aatcaaagtc taagaaaata atacatgctt 1800
tagcagcaaa aataagaatg gtactatact taatcctcat catagtcttc aacctgcat 1860
atagcacact taacatttta tattcaata tactttaatt tagtcatgat aatacaactc 1920
acctactcca ttatagccga taatacaact cacctagcta ctccattata gtccaacaat 1980
atcaaatgaa taaaatagta atgggtgactt aaagggctga atccaacata tattctgaca 2040
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acaaacgc atattattat taaaacaaaa tagtactcca atcataataa attatcttat 2220
attatattgc caacaattaa aaattcaaat tagaacaat taaatctcag ttgtctttat 2280
tatattatta tcaacaataa taatttaata ctgatcgaag aactttccct ttcaagtctt 2340
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cttcatactt cctttgctgt gataatcatc atc 2433

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<210> 12
<211> 26
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> GSP1 promoter

```

```

<400> 12
ctgagccgag tgacaaagga agccat 26

```

```

<210> 13
<211> 22
<212> DNA
<213> Artificial Sequence

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<220>
<223> AP1 promoter

```

```

<400> 13
gtaatacgac tcactatagg gc 22

```

```

<210> 14
<211> 25
<212> DNA
<213> Artificial Sequence

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<220>
<223> GSP2 promoter

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```

<400> 14
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<210>	15	
<211>	19	
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<211>	26	
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<213>	Artificial Sequence	
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<223>	exon promoter	
<400>	16	
	atggcttcct ttgtcactcg gctcag	26
<210>	17	
<211>	30	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	intron promoter	
<400>	17	
	tcatacagctc gaccactcat ttctttctca	30
<210>	18	
<211>	35	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	forward promoter for -2433 deletion promoter	
<400>	18	
	gccaaagcttg gtcctcatgg agtattctca taact	35
<210>	19	
<211>	33	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	forward primer for -1934 deletion promoter	
<400>	19	

gccaagcttt tgccatctca ccacttcgtc tta 33

<210> 20
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> forward primer for -1467 deletion promoter

<400> 20
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<210> 21
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> forward primer for -1199 deletion promoter

<400> 21
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<210> 22
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
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<400> 22
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<210> 23
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 <212> DNA
 <213> Artificial Sequence

<220>
 <223> forward primer for -433 deletion promoter

<400> 23
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<210> 24
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> reverse primer for -2433, 1934, 1467, 1199, 818, 433, 366, 306, 177 and 110 deletion promoter

58049-00035.ST25_Substitute (3-19-07)

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58049-00035.ST25_Substitute (3-19-07)

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<223> forward primer for NPTII

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